

A REVIEW OF THE WASHINGTON STATE
WATER USE POLICY

by

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I. Introduction

Water. It is precious, yet it is free. It is the source of all plant, animal, and human life, yet it is often needlessly and purposely wasted. It is used for pleasure, for power, for growth, for profit; yet it is rarely given a second thought. It is cursed on dark, dreary winter mornings; praised on hot summer afternoons. It is often overwhelmingly abundant, yet is becoming increasingly scarce. The hydrologic cycle is simple, yet the subject of water is complex. Any discussion of the use of water yields complex analyses and conflicting results. However, it can generally be agreed that the numerous uses of water in Washington State will (or are) conflict(ing) as the demand for the quality and quantity of water increases and the availability decreases.

In the past generation, as the demand increased and the supply decreased, it became clear that some kind of water use policy would be required to provide a rational, well defined, clearly identified objective and statement of fact relating how all aspects of water use, control, and quality would be allocated. In the sixties and early seventies, efforts to establish and implement a serious water use policy began in earnest. These attempts initially concerned the point source pollutants and effluent without considering the receiving water quality or quantity. As time passed, these areas of consideration became more important and the policies were adjusted to reflect those concerns. The adjustments were wide-ranging and the concerns were addressed in many areas, resulting in conflicts and overlapping authority and jurisdiction. Until very recently the development of state water policy was akin to walking a dog. The state was so wrapped up by the dog and leash that it had no control in the

progress or direction of the water use policy. Only recently has the state cut the many binds, established a new firm hold on the leash and stepped smartly off in the right direction. But one must look down that road and judge whether it truly is the right direction for it may be one of the last chances to insure the implementation of a valid, useful policy during normal situations. As noted in Table I; substantial shortages in several areas may exist by the year 2020. Policies and legislation enacted under crisis situations are often reactive and only address the immediate problems, without full consideration of long term goals and effects. It is now, when conditions are stable and generally acceptable, that the proper policy should be adopted and implemented.

The intent of this paper is to provide a brief review of the history of the development of the Washington State Water Use policy and the current situation; and in addition provide a brief analysis and alternative of the future course of direction. As indicated in the first paragraph, the subject of water is a complex and complicated matter. The same can be said of a water use policy. The intent of this paper is not to probe and analyze the infinite depths of past history and the current situation. It is intended to provide a surface examination of the establishment of a rational policy and briefly discuss some alternative revisions that may exist. This paper is not intended as the exploratory surgery and identification of the cancerous materials, but merely as pinpricks to gain the attention of the individual and to stimulate thought.

Study Area	Domestic, Industrial and Irrigation Water Requirement (see Tables IV-a to IV-e)			Water Supplies generated in the State only		Critical Condition # (other than conservation uses) Mean Supply	Remedy ** Misc.	Conservation Requirements (See Table IV-f)			Total Demand Annual, acre-ft	Critical Period Demand, cfs	Mean Net Supply after Total Annual Demand, Col. (4) - Col. (11) acre-ft	50-year low flow New Supply after Total Annual Demand, Col. (5) - Col. (11) acre-ft	Annual Depletions to Columbia River System, acre-ft (Washington only)
	Peak No. With-drawal, cfs	Annual With-drawal, acre-ft	Annual Consumptive use, acre-ft	Mean annual flow, acre-ft	Annual flow with approx 50-yr recurrence internal, acre-ft			Annual acre-ft	92-day Critical Period	1,000 cfs					
	(1)	(2)	(3)	(4)	(5)			(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
I	11,657	4,637,455	4,456,655	36,670,000	20,736,000	local	inter-	11,603,000	2,922,000	16,008	16,059,655	27,665	20,610,345	4,676,345	--
II	2,197	917,284	881,184	24,209,000	10,920,000	local	inter-	9,939,000	2,505,000	13,724	10,820,184	15,921	13,388,816	99,816*	--
III	6,020	2,687,774	2,639,374	18,782,000	12,520,000	month	inter-	5,535,000	1,390,000	7,615	8,174,374	13,635	10,607,626	4,345,626	2,639,374
IV	12,565	4,906,627	1,213,503	6,280,000	3,418,000	month	inter-	1,141,000	288,000	1,578	2,354,503	14,143	3,925,497	1,063,497*	1,213,503
V	2,162	727,918	341,896	6,188,000	3,128,000	local	inter-Misc.	1,111,000	280,000	1,534	1,452,896	3,696	4,735,104	1,675,104*	341,896
VI	539	184,144	79,969	2,517,000	707,000	local	inter-	1,147,000	302,000	1,655	1,226,969	2,194	1,290,031	-519,969*	79,969
VII	31,490	11,003,628	4,792,227	848,000	342,000	month & annual	inter-Columbia Misc.	721,000	169,000	926	5,513,227	32,416	-4,665,227*	-5,171,227*	4,792,227
VIII	1,596	403,197	229,166	727,000	334,000	month	inter-Misc. Snake	411,000	104,000	570	640,166	2,166	86,834*	-306,166*	229,166
TOTAL	68,226	25,468,027	14,633,974	96,221,000	52,105,000			31,608,000	7,960,000	43,610	46,241,974	111,836	49,979,026	5,863,026	9,296,135

local: any shortages will be on a local basis, not identifiable where grouped by Study Area

month: shortage occurs during month of high use

annual: shortage occurs on an annual basis--indicated if annual consumptive use is within 75% of mean annual supply

** inter-: remedy includes minor reservoir development and/or local inter-basin water transfers

Columbia: Columbia River is source of required water

Snake: Snake River is source of required water

Misc: Other streams entering State will supply additional requirements

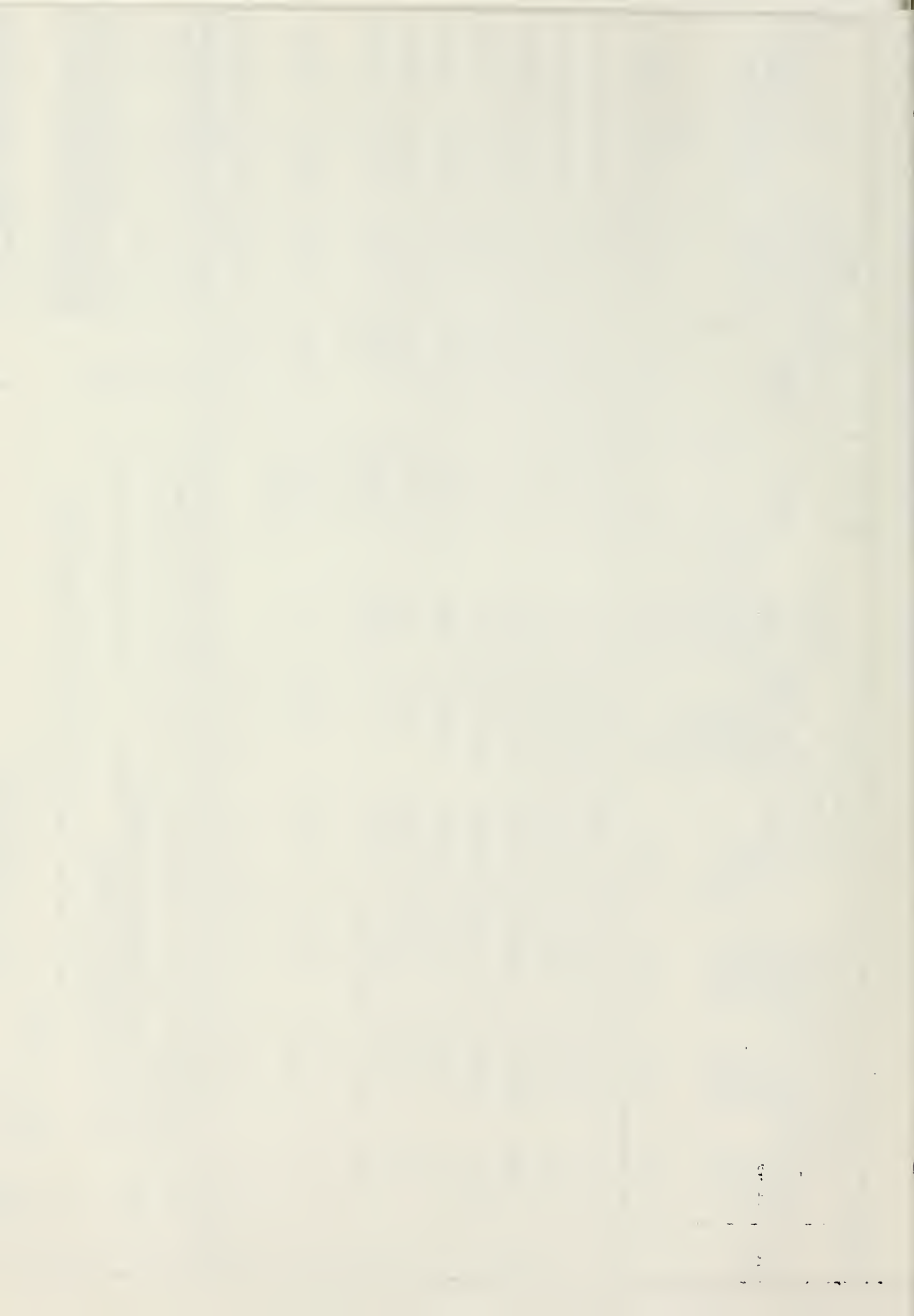
*** includes: consumptive use figures of Col. (3) and flow requirements of Col. (10)

includes: sum of Col. (1) and Col. (10)

negative values indicate a requirement of either inter-study area water transfers, or pumpage from the Columbia or Snake Rivers or Miscellaneous streams entering the State from Canada, Idaho, or Oregon.

φ an approximation only, determined by summing up the 50-year flows to the watersheds in each of the Study Areas.

* possible water quality maintenance problems supplementation



II. In the Beginning; Water Policy Determined by Social and Economic Goals

The early settlers in Washington found the state to be of two contrasts. On the west side of the Cascades, they found an area rich in natural resources, including wildlife, forests, fish, and water. On the east side of the Cascades, they found an abundance of dry, dusty earth with few rivers and wooded areas. The settlers found that it was very difficult to exist in the dry areas, but much easier to live and exist on the shores of the river. Their friends on the west side, obviously, found that the resources they were looking for existed near water sources. Throughout the whole state, it was very common to establish a community on the river. Accessible from several directions, it provided water for crops, for drinking and for livestock.

Thus, it can be seen that very early in history, water was determined to be a very powerful social and economic influence. People who lived on or near the water thrived and flourished in successful communities. Those without access to water often lived in destitute isolation; merely existing.

In the very early years, the abundance of quality water allowed almost unlimited use (and abuse) without causing any problems. There was always enough to go around. However, as western areas were settled and became more and more crowded, a system of water rights was developed. This system, the appropriation doctrine, is a priority system of "first in time, first in right" that establishes the right of beneficial water use. Thus, the first person to declare and utilize a certain quantity of water for a certain purpose held appropriative rights to that water.

Other users of water were permitted to draw from the same source, but only if the more "senior" rights were not affected. This became the first real water law and policy in Washington State.

In the early 1900's, the western part of the state continued to grow and the major population and activity centers continued to exist on water courses. Meanwhile the eastern part of the state remained a generally uninhabited, unused area. This was true in most western states. The people tended to work, and live, near the water, while huge areas of real estate remained empty. Recognizing the value of this empty land, and recognizing the value that people had for water, Congress decided to join the two together. Thus was born the Reclamation Act of 1902.

This Act provided the authorization and funds to construct vast irrigation facilities and to provide 160 acre plots to those desiring them. In this manner, water would be brought to land some distance from water sources and many more people could have the opportunity to thrive in once empty and barren land. The dust, when wet by water, became the seed for growth. Again, the informal "unofficial" state water policy promoted the use of water to meet social and economical goals. Water was used to provide a means whereby individuals could get ahead in life.

The facilities constructed for the purpose of irrigation required large sums of money that were appropriated from the Federal Treasury. Congress had mandated that very liberal repayment terms were to be employed. Often this meant that the users of the irrigated water had to pay very little for what they used. As the projects grew larger and more expensive, Congress amended the Reclamation Act to require that the users be

required to pick up a substantial share of the cost. This meant that the hydroelectric generating plants and municipal water supplies that also used the irrigation reservoirs had to pay much more for their water than did the irrigators. The social goal of the Act remained in the forefront, but the economic goal was partially overshadowed.

But not over the entire state; the Reclamation Act brought many farmers to the eastern part of the state (meeting social objectives), but the water used for hydroelectric generation, while relatively expensive, provided an abundant supply of electricity to the western part of the state. Meanwhile, the abundance of water on the west side of the state continued to attract those people and businesses that depended on it for their livelihood. So, indeed, overall social and economic growth was being provided by water.

In 1917, the state recognized that many individuals, businesses and agencies were claiming water rights under the appropriation doctrine, and that it was becoming unclear as to who had what rights first. The state passed the Water Code Act of 1917, requiring that permits (records) be filed with the state indicating the rights as they existed. In effect, the first step of the development of a state water use policy was to begin this recording system of who was using what source of water for what reason.

Through the first part of this century water continued to be used as the social and economic growth stimulus. However, its apparent unlimited abundance buried any questions concerning its proper use, wasteful practices and long term considerations. The country (and state) had their collective minds on the wars, economy and other problems; water was always there, so was never considered to any substantial degree.

Thus we entered the sixties.

III. The Action Starts 1960's - 1980's; Water Policy Determined by Environmental Goals

Until this time period the people of Washington were generally oblivious to the problems of the gradual degradation of water quality and quantity. There was still an overall abundance of good clean, clear water. The Evergreen State, with its rainy winters and snow induced streams and rivers, was portrayed as the wettest spot in the U.S.

To be sure, there were many academics and environmentalists who recognized that the water quality problem, while in its beginning stages, could grow much faster and larger than could be controlled. While the state, in general, had an overall good supply of clean water, these people observed the local problems. There were some areas that were beginning to experience consistent problems with water quality and quantity. They found that there were very little number of laws, regulations and policies regarding water use in the state. The few laws that existed were not enforced, were ambiguous and confusing, or were contradictory. The appropriative water rights law, established in the early years of statehood, provided the basis of "rights" to the water, but records of these rights were outdated, erroneous and nonexistent.

Locally, the concern of the academics and environmentalists, while vocal, seemed to be lost in the thunderous roar of clean water coursing down the mountain streams. But on a national level, the quality of the water was of great concern and attracted high level attention. This was due to the severe problems that were beginning to plague the heavily industrial Midwest and Northeast states. They were beginning

to realize that the pollution problem was indeed going to be a severe one and would require federal regulation and assistance to solve. The quality of water was a major concern, but the quantity of water was also being considered. Even in 1959, the "rights" of fish and wildlife were being recognized. The Izaak Walton League of America made an impassioned plea before Congress to promote legislation to insure sufficient quantities of instream water for fish and wildlife purposes. They encouraged stronger federal control in water rights and allocations by arguing that:¹

- a) Fish and wildlife uses are dependent upon the leavings of water.
- b) Most states are not likely to give equal status to recreation and fish and wildlife, especially since the state legislatures are dominated by agriculturists and stockmen. For that matter, constitutional changes would have to be made in at least some of the states to accomplish a result.
- c) None of the western states recognizes a water right unless there is an "appropriation."
- d) Even those few states that accept fish and wildlife as beneficial use require an "appropriation," i.e., diversion and allocation of a certain quantity.

The league argued that control of water resources on public lands be returned to the states only after the state laws were changed to take account of such public uses as pollution abatement, recreation, fish wildlife, and scenic beauty by giving them equal status with all other uses, with the exception of domestic and livestock uses that should enjoy priority.

The national concern grew by leaps and bounds and resulted in the first of the major legislative actions in the water arena. In 1964, the U.S. Water Resources Research Act of 1964 (Public Law 88-374) was signed by President Johnson. The legislation states:

"In order to assist in assuring the nation at all times of a supply of water sufficient in quantity and quality to meet the requirements of the expanding population, it is the purpose of the Congress by this Act to stimulate, sponsor, provide for, and supplement present programs for the conduct of research, investigations, experiments and the training of scientists in the fields of water and of resources that affect water."

As a result of this act, the State of Washington Water Research Center was formed and provided a focal point for which the studies, and concerns, of those concerned with the water problems could be directed. The voices of the individuals now had a means of direction and amplification to present the ever increasing problems.

Within a very short time of the passage of the Water Resources Research Act of 1964, the Water Resources Planning Act of 1965 (Public Law 89-80) was passed. This item of legislation was perhaps the most significant step in the identification and correction of the water quality and quantity problem. This act created (and required) a cooperative framework between the Federal Government, states, local governments, and private enterprise. It established the Water Resources Council, a cabinet level agency, to develop unified plans and policies. It required standards and clean up plans for all interstate and coastal waters;

establishing a blueprint for future actions. The standards were to allow a comprehensive river basin pollution control plan, coordinating all Federal, state, local and private investments to achieve the goals in water quality.

As with all major pieces of legislation, the Water Resources Planning Act had both positive and negative effects on the State of Washington. On the positive side, it required the state to take a hard look at its water resources. The newly established Water Resources Council was required to develop a biennial national assessment of the adequacy of water supplies. The WRC then went looking to the states for the local information to be provided. Washington was forced to investigate its current resources and provide an official assessment, available for public scrutiny and observation. While the state still "officially" maintained an abundant supply of clean, fresh water (compared to the eastern states), the local government began to realize that, in fact, we were beginning to experience some major problems. So the first major step forward was taken; the problem was recognized as a "problem"!

The negative effect of the Water Resources Planning Act of 1965 (the local step backwards) was the confusion that resulted in the rush to develop plans and policies. The intent of the Act was to develop a cooperative framework and develop unified plans and policies. Instead, what happened? Every Federal, state, and local agency devised, implemented and published its own perceived water resources goals and policies. The effect? Instead of no "official" water resource policies (existing before the '60s), the state now had over 20 "official" water resource policies. Some of the excerpts from these policies can be

examined below:

Department of Agriculture - Forest Service

(Manual of the Forest Service, Section 2541)(1966)

"... the (Forest Service) has the right to use all water needed for the present or future management of land reserved for public domain for National Forest purposes. The Forest Service responsibility for meeting the resource needs of the people, including water, dictates a policy of caution and reasonableness in our deliberate use of water to improve the end productivity of the National Forest System."

"The main goals of the Forest Service are in the areas of (1) watershed management, protection and restoration, (2) flood control and (3) wildlife management."

Department of Agriculture - Soil Conservation Service (SCS)

(Soil Conservation Service Manual Section 10182)(1967)

"... sponsoring organizations must acquire or provide evidence that landowners have acquired such water and storage rights as may be needed in the installation and operation of the works of improvement."

Department of the Interior - Bureau of Indian Affairs

"The policies under which the Bureau operates with respect to Indian land and water resources include the retention of ownership by Indians and resource management for sustained yield benefits."

Department of the Interior - National Park Service

"Water resources and watersheds on National Park lands are to be unmanaged, with few exceptions, in order to conserve scenery, national and historic objects, and wildlife for the unimpaired enjoyment of future generations."

Department of the Interior - Fish & Wildlife Service

(FWS Engineers Handbook Section 702.1)(1967)

"policy is to conform with state's water law whenever possible in securing water rights including new or supplemental uses ... This enables the Bureau ... to record our right to use water so that the public and the states are aware of what we claim."

State of Washington Water Pollution Control Commission

(RCW 90.48.010)

"to maintain the highest possible standards to insure the purity of all waters of the state consistent with public health and public enjoyment thereof, of the propagation and protection of wildlife, birds, game, fish and other aquatic life, and the industrial development of the state, and to which end require the use of all known available and reasonable methods by industries and others to prevent and control the pollution of the waters of the State of Washington."

State of Washington

(Water Resources Advisory Council, 1968)

PREAMBLE:

Recognizing the State of Washington is favored with clean and abundant water resources and that this resource is vital to the

health, welfare, and economic well-being of the citizens of the state, and, further, recognizing the obligation of the state to wisely use and properly manage this resource in a manner serving the best interest of all the people, IT IS DECLARED TO BE THE PUBLIC POLICY OF THE STATE OF WASHINGTON:

OBJECTIVE:

To achieve sound and coordinated resource management practices; to give complete consideration to the protection and preservation for optimum use of Washington State waters--atmospheric, surface and ground, both marine and fresh--consistent with the health, enjoyment, safety, economic and general welfare of all the people of the State; to promote efficient use of water; and to minimize conflicts of water use.

- A. Control rapid and excessive runoff, unwarranted restrictions to streamflow, erosion or siltation, excessive temperatures; and correct undesirable chemical, biological and other physical water conditions.
- B. Reduce waste, correct excessive allocations of water by establishing current and reasonable standards for water use, and recover water quality from abandoned or abusively used water rights when such is in the public interest.

ALLOCATION:

To encourage and give precedence to coordinated comprehensive water planning and development for the widest range of uses consistent with public interest. Toward this end, planning shall be long-range in nature, yet flexible enough to meet current and changing requirements.

The state shall determine and maintain a current assessment of the productive potential and capacity of its water resources as they may affect this basic water policy, and shall base withdrawals, allocations, and uses on the determined needs and capabilities of the water source.

COOPERATIVE STUDIES AND RESEARCH:

To coordinate activities of all state, local, and private interests involved in water resource planning, use or management; and to cooperate in the coordinated planning efforts of Federal, interstate, and international agencies assigned such responsibility as these affect the water and related land resources of Washington.

PARTICIPATION:

To recognize the need for state participation in water resource project costs where benefits derived are commensurate with state needs and interests.

LEGISLATIVE COOPERATION:

To keep the legislature advised of the status of water resources planning and development, and to encourage the legislature to enact such new legislation and modify such existing statutes as may be necessary to implement this policy and provide adequate appropriation of funds to accomplish the objectives thereof.

RESPONSIBILITY:

That the Executive Branch of government of the State of Washington, as the agents of its people, shall be responsible for execution of this policy, consistent with the intent of the Legislature, incorporated in the laws of the state as these relate to the conservation, management and perpetuation of our water resources in the best public interest.

JURISDICTION:

That jurisdiction of the waters of the State of Washington shall be retained and protected by the state to meet the present and future demands of its citizens, and maximum effort will be directed to the development of interstate and international waters for the benefit of the state and the region.

That this policy, and such regulations and requirements relating therefore to water quality and quantity shall be equally applicable to all the individuals, public and private entities.

USES:

That the beneficial uses of the waters of the State of Washington shall include, but not be limited to, potable water supplies, propagation of wildlife, fish, shellfish and other aquatic life, recreation and aesthetic values, irrigation and other agricultural needs, industrial water supplies, navigation, and generation of electric power. In some instances, the discharge of treated wastes into waterways may be permitted, provided that treatment is sufficient to prevent water-quality impairment and protect all water uses.

QUANTITY:

To provide for the conservation and efficient utilization of surface and ground water resources by storage, recycling, recharge, reduction in transmission and evaporation losses and rehabilitation of used waters; and for the augmentation of existing supplies through research and development of techniques in weather modification and desalinization.

QUALITY:

To protect and preserve the high quality of Washington waters; to require preventive or remedial action by those responsible for

pollution or other acts resulting in significant changes detrimental to quality; and to require that any wastes amenable to treatment or control must be treated or controlled prior to discharge into any waterway.

PREVENTION AND REDUCTION OF ADVERSE INFLUENCES:

To prevent and reduce all undesirable land and water management practices and influences which may damage, deplete, waste or interfere with the supply of water and its uses, to maintain surveillance thereof"

Thus, it can be seen that the state was flooded with many wide ranging and varying official "policies" from the different federal, state and local agencies. While the policies (such as the state's) are of the "motherhood and apple pie" variety; the broad range and purposely vague statements leave much room for interpretations and indicates the wide ranging interests of the various agencies. The intent behind the promulgation of these policies is admirable; the results were nothing less than confusing, cloudy and contradictory.

In addition the research required for the first assessment of water resources yielded the fact that the records of water rights were in a sad state of existence. In its 19th Biennial Report, the Water Resources Division noted that "of 254 towns and cities incorporated (in the state), 39% have no rights recorded in this office."

The state was going to enter into the seventies with no clear record of who had rights to the water or with no clear policy of what to do with the water it did have.

One must note, with pride, that the state legislature recognized the disarray of its water resources and took prompt action in an effort to correct the situation. The legislature passed a Water Rights Notice, (RCW 90.11.191) requiring all persons, associations, corporations, city, county, state and US Agency to file its water rights no later than 1974 or face the possibility of relinquishment of the water right. Additionally, the legislature formed a Department of Ecology, which commenced activities on 1 July 1970. The legislature's statement of policy in the creation of the Department of Ecology was:

"The legislature recognizes, and declares it to be the policy of this state, that it is a fundamental and inalienable right of the people of the State of Washington to live in a healthful and pleasant environment and to benefit from the proper development and use of its natural resources. The legislature further recognizes that as the population of our state grows, the need to provide for our increasing industrial, agricultural, residential, social, recreational, economic, and other needs will place an increasing responsibility on all segments of our society to plan, coordinate, restore and regulate the utilization of our natural resources in a manner that will protect and conserve our clean air, our pure and abundant waters, and the natural beauty of the state."²

The new department was directed to undertake, in an integrated manner, responsibility for air regulation and management, solid waste regulation and management, and also the "water regulation, management, planning and development programs previously performed by the Department of Water Resources and the Water Pollution Control Commission."² So at the very last minute, the state entered the seventies with a single department responsible for the development of a water use policy, and an effort was started to sort out the document the state's water rights.

In 1972, Congress entered into the picture and enacted legislation that was, once again, clear in intent, but in fact "muddied" the situation with complex regulations that were long, confusing and difficult (if not impossible) to meet. Public Law 92-500, amendments to the Federal Water Pollution Control Act, was passed by Congress in October 1972.

The legislation's major goals, pertaining to point source waste discharges, are summarized below:

- A. "By July 1977, all publicly owned waste treatment works should provide a minimum of secondary treatment, and for all other discharges, best practical treatment (BPT), as defined by EPA, should be applied."
- B. "It is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides recreation in and on the water be achieved by July 1, 1983."
- C. "It is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985."

The State of Washington initially welcomed the national legislation but quickly found that the goals would be very costly, and probably impossible, to meet. The state had previously derived a water quality classification system and identified five use classes: Class AA waters, Class A waters, Class B waters, Class C waters and Lake Class waters. Table II provides the characteristic uses to be protected by the various water quality standard classifications and Table III provides a summary of the water quality criteria. The state immediately interpreted the legislation as requiring that all water courses were to meet Class AA standards by 1983, a feat they considered impossible!³ Although the state had an abundance of clear water, there were some identified trouble spots in which the water quality was of marginal quality (but still met Class B standards). The state felt that it should only be

TABLE 11. Characteristic uses to be protected by the various water quality standard classifications in fresh and marine waters

	Watercourse Classification				
	Lake	AA	A	B	C
FISHERIES					
Salmonoid					
Migration	F	F M	F M	F M	F M
Rearing	F	F M	F M	F M	
Spawning	F	F	F		
Warmwater Game Fish					
Rearing	F	F	F	F	
Spawning	F	F	F	F	
Other Food Fish	F	F M	F M	F M	
Commercial Fishing	F	F M	F M	F M	
Shellfish	F	M	M	M	
WILDLIFE	F	F M	F M	F M	
RECREATION					
Water Contact	F	F M	F M		
Boating and Fishing	F	F M	F M	F M	F M
Environmental Aesthetics	F	F M	F M	F M	F M
WATER SUPPLY					
Domestic	F	F	F		
Industrial	F	F M	F M	F M	F M
Agricultural	F	F	F	F	F
NAVIGATION	F	F M	F M	F M	F M
LOG STORAGE & RAFTING	F	F M	F M	F M	F M
HYDROPOWER	F	F	F	F	F

Note: F = fresh water
M = marine waters

Source: State of Washington, Department of Ecology Water Quality Standards, December 19, 1977.

Table III Summary of Water Quality Criteria

Class Designation	Typical Uses	(1) Dissolved Oxygen (mg/l)	(2) Temperature (°F)	(2) Total Dissolved Gas (% of Saturation)	pH	(3) Turbidity (JTU)	(2) Total Coliform (median values) (organisms/100 ml)
CLASS AA Exceeds requirements for substantially all uses Fresh Water Marine Water	Potable Water supply; fishing; swimming; fish and shellfish reproduction and rearing	9.5 7.0	60 55	110 110	6.5-8.5 7.0-8.5 (Var. 0.10)	5 5	50 70
CLASS A Meets or exceeds requirements for substantially all uses Fresh Water Marine Water	Potable Water supply; fishing; swimming; fish and shellfish reproduction and rearing	8.0 6.0	65 61	110 110	6.5-8.5 7.0-8.5 (Var. 0.25)	5 5	240 70
CLASS B Meets or exceeds requirements for most uses Fresh Water Marine Water	Industrial and agricultural water supply; fishing; shellfish reproduction and rearing	6.5 5.0	70 66	110 110	6.5-8.5 7.0-8.5 (Var. 0.5)	10 10	1,000 1,000
CLASS C Meets or exceeds requirements of selected and essential uses Fresh Water Marine Water	Cooling water, fish passage; commerce and navigation	5.0 4.0	75 72	110 110	6.5-9.0 7.0-9.0 (Var. 0.5)	10 10	1,000 1,000
LAKE CLASS Meets or exceeds requirements for all uses	Potable Water supply; fishing; swimming; fish and shellfish reproduction and rearing	(4)	(4)	110	(4)	5	240

(1) Shall exceed the values shown.

(2) Shall not exceed the values shown.

(3)

(4) Shall not exceed the values shown beyond naturally occurring concentrations
No measurable change from natural conditions

necessary to provide a water quality sufficient enough to meet the qualities desired for the particular use of a particular water stream. This means that if a water is to be used for industrial or irrigation purposes that it need not be as clean as the water used for municipal (drinking water) supplies. It was the state's opinion, and interpretation, that this be kept in mind when the water quality goals were being pursued.

The entire scope of the program initiated by P.L. 92-500 proved to be overwhelming. The financial allotment for the construction of new facilities was 75% federal, 15% state and 10% local. However the tremendous sums of money required at all levels to meet the goals became too great to complete the facilities to meet the 1977 deadlines.

However, this didn't mean that Washington State didn't attempt to meet the goals. The water quality standards identify 154 surface water segments. In 1977, 136 segments (88%) met the 1983 goal (Class AA, A or Lake Class). In addition, 91% of the industrial and commercial discharges achieved BPT, with the remainder expected to achieve BPT within the next 1½ years.³

The area of pollution control was not the only battle that the state was involved in with the Federal Government. Over the entire history of the state, the Federal Government has usurped the state management and control of the water within the state boundaries. Through various techniques including the power of eminent domain, the commerce clause of the constitution, treaty power (with Indians), and the Congressional Mandate, the Federal Government has often disturbed the progress that the state has made.

Although a discussion of the history of these interferences is too detailed for this paper, a few highlights of the existing major effects are presented below:

- 1) The Rivers and Harbors Act of 1899 allowed the federal government to reserve water rights to allow for interstate transportation and commerce.
- 2) Reclamation Act of 1902 allows the Secretary of Interior to allocate water for federal irrigation projects.
- 3) Federal Power Act of 1920 grants the federal government the licensing power to permit private parties to build multi-purpose water use projects.
- 4) Flood Control Act of 1936 allowed the federal government to build storage reservoirs to prevent flooding.
- 5) The Reservation Doctrine reserves all water (including ground water) on federal land for federal use.

Thus, in addition to considering a valid policy of use by those parties within the control of the state. The water rights held by the Federal Government must be considered the enactment of P.L. 92-500 and 89-80 were merely another federal burden upon the state.

So, while the state objected to the Federal "fingers in the pie" and questioned the "blanket" requirements (of the 1983 goal) it aggressively pursued the goals established by the Federal Government and pushed into the eighties.

One other noteworthy event occurred in the seventies that was taken seriously at the time, but generally forgotten as the eighties opened up. In 1973, 1977 and 1979 the state suffered three droughts. These droughts provided only 62%, 52% and 73% of the normal annual flow, caused great confusion and economic losses, but resulted in no significant long term policy changes.¹⁵ These omens of things to come remained unanswered at the end of the seventies.

IV. 1980's and Beyond; Where Do We Go From Here?

Entering the eighties, the state was continuing its fight against the blanket Federal goals. It maintained that the goals could not be met without a greater commitment of funds than was foreseeable. The entire Congressional authorization nationwide for FY 1979 to FY 1982 (to meet the 1983 goal) was \$20 billion, yet it was estimated that an additional \$2 billion was needed for the State of Washington alone to meet the 1977 goals of secondary treatment for all publicly owned plants.³ The state also argued that many of its particularly troubled water segments were caused by non-point pollution sources that wouldn't be helped by secondary treatment plants.

In a sincere effort, the Federal Government tried to help the program along by relaxing and reviving some of the original constraints and regulations of the 1972 legislation and some other amendments (P.L. 95-217) passed in 1977. These changes only seemed to antagonize the state's efforts and degraded the state program.

However, the new administration elected in 1980 advocated a relaxation of federal regulations and a return to the state's right to rule and govern itself. The new administration also advocated a severe cut in government spending. So, theoretically, (but not technically or legally) the standards established for 1983 and 1985 were put on hold by the state and federal governments.

As the state moved further and further away from the national goals and policy, it found a need to further develop its own goals and policies. The question is where do we go from here?

The state has made great strides in the development of a comprehensive, unified water use policy. It has identified specific minimum flows in critical areas that must be maintained to protect fish and other natural wildlife (RCW 90.03.247). It has identified particular water course segments, its classifications and the allowable uses (see Appendix A). It has attempted to revamp its water rights and record keeping and establish who has what rights and where (although this process is tied up in massive litigation that may take years to solve!) The state is continuing in the efforts to provide cleaner waters through the construction of new pollution control facilities. It has replaced the earlier rambling "motherhood and apple pie" policy with a more, succinct, to the point, statement as shown below:

State Water Policy (RCW 90.03.005)

"It is the policy of the state to promote the use of the public waters in a fashion which provides for obtaining maximum net benefits arising from both diversionary uses of the state's public waters and the retention of waters within streams and lakes in sufficient quantity and quality to protect instream and natural values and rights. Consistent with this policy, the state supports economically feasible and environmentally sound development of physical facilities through the concerted efforts of the state with the United States, public corporations, Indian tribes, or other public or private entities. Further, based on the tenet of water law which precludes wasteful practices in the exercise of rights to the uses of waters, the Department of Ecology shall reduce these practices to the maximum extent practicable, taking into account

sound principles of water management and the most effective uses of public and private funds, and, when appropriate, to work to that end in concert with the agencies of the United States and other public and private entities."

Note that while the statement, on its own, still exudes generalities, it does have some specific legislation and passages defined in the RCW and WAC to support the general intent of the policy. The legislation that does exist is in the social, economic and environmental areas (to some extent). This is particularly true because there has been a great deal of discussion, experiences and time to determine a course of action and policy. In the earlier history of the state, the problems and solutions appeared relatively simple and could be resolved in a timely fashion. Now, however, the situation is much more complex, requires much more discussion, thought and analysis and often requires so much time to resolve that a critical stage is achieved before specific answers and solutions can be provided.

So how does the official policy hold up at this point in time? Is the intent and supporting legislation strong enough to provide the correct direction in the use of our water resources? Or are there too many vague generalities and unanswered questions that will allow crises to occur against our best desires? Where are we now and where do we go from here? A close look at the water policy may provide some answers.

In the economic and social areas, the policy holds up well. The statement requiring "... net benefits ... from both diversionary uses ...

and retention of waters within streams and lakes ..." recognizes the economic benefits that result from water projects, but does not neglect the benefits that result from the retention of water instream to the fish and natural wildlife. The net benefits (which is benefits less cost and opportunities lost) is somewhat difficult to define, but it is most often used for comparative purposes to allow the selection of a particular project or purpose. In other words, it is difficult to determine the benefit of a recreation use, or the existence of fish and wildlife from a particular project, but the comparative analysis of all possible uses (i.e., determining opportunities lost) will incorporate the same derived benefits. Note that the benefits to be gained are not defined in economic or social terms. This is purposely undefined to allow the selection of a particular water use based on either economic or social benefits. The legislation requires public discussion on each proposed use of water, so that the public can determine if the social or economic alternatives will provide the maximum net benefit. Previous public hearings and discussions helped determine the classification of uses of water shown in Appendix A. (The classification shown in Appendix A merely indicate what uses of water are permitted within the quality of water available. It doesn't restrict the use of high quality water for low quality purposes (such as irrigation); however, it does prevent the use of a lower quality water for recreation or municipal purposes.

Since public hearings are held on the proposed projects, the public can determine the "maximum" net benefits, either on a social or economic scale. These public discussions and

hearings also insure that any proposed project is an "environmentally sound development." Several previously built projects were found to be environmentally unsound, but were built anyhow (often against public opposition). This part of the legislation now allows a strong participation from the public and often prevents economical and environmental abuses of water from becoming a reality.

The policy appears strong in the area of environmental matters (the prevention of pollution). Although the federal government is searching for complete elimination of pollutants, the state recognizes the practical and economical impossibility of this goal. Therefore, they don't push for the "blanket" goal, but merely are searching for "economically feasible" facilities to provide the quality and quantity of water. Thus, if a water source is used for mostly agricultural purposes, then it is not desirable or required to clean it to the quality of drinking water. It must continue to meet certain quality standards, but does not need to be of needlessly high quality for those low quality uses.

This policy was probably not a result of clear insight or brilliant theory, but rather as a temporary escape from the problem of non-point source pollution. The state could construct many facilities to treat the effluent of all point sources along certain segments, but would not appreciably clean up the water in the stream due to the non-point sources. These non-point sources include urban runoff, runoff from logging operations, runoff from irrigation and agricultural practices and natural runoff, and in some areas provide a great source of water

stream degradation. It is very difficult to measure the exact impact of these non-point contributions and even more difficult to control or treat them. It is almost impossible to prevent non-point runoff, so the state is concentrating on changing and improving the best management techniques (BMT) of logging and agricultural practices to reduce the non-point loading. The state believes that the rational, economical use of sewage treatment facilities combined with the implementation of BMT will achieve the maximum quantities of quality water, rather than a blanket policy of increasing numbers of sewage treatment plants.

The state policy is most deficient in its approach to the conservation of the water supplies. The policy requires the "Department of Ecology to reduce the (wasteful) practices," however in this case it does not provide much specific legislation to support this intent. Recognizing that agriculture irrigation is the largest consumptive user of all the state's waters, RCW 173-596 provides procedures and policies governing appropriations of significant amounts of water for agricultural irrigation use. But this section is also very general and does not provide specific guidelines. It appears the major obstacle is the water rights appropriation system. Many of the earlier appropriators of water were the farmers, who were provided tremendous amounts of water for their farming. However, over the years as productivity of their farms increased, the actual requirement for water decreased. New farming practices, new irrigation methods, hardier crops reduced the water requirement per acre of crop. Under the appropriation law, though, if any portion of water rights is not used, then the right is lost. RCW 90.14.130-180 requires that a non-use of water rights over 5 successive years results

in a loss of those water rights. The farmer is faced with the option of continuing the inefficient, wasteful use of water or the loss of his rights. He often chooses the former!

Additionally, the price of water is so inexpensive to preclude sufficient reason for the individual, industry or municipality to conserve it. In the age of dollars per gallon for milk, gas and paint, water is a great deal for pennies a thousand gallons!

However, the droughts of 1973 and 1977 have indicated the problems of sufficient quantity can be severe. The state must recognize that an evergrowing population, industry and agricultural community will require ever increasing efforts (and successes) of conservation and must act in that direction.

Thus a quick examination of the state water use policy indicates that it is fairly well defined and supported in the areas of social and economical considerations, slightly less efficient in the area of environmental concern and negligible in the conservation aspect. What can be done to improve the policy? Since the last two areas will grow increasingly important in the very near future, it is my opinion that the following actions should be taken and the water policy adjusted to reflect these changes:

- 1) Change water rights law to allow selling or leasing of recognized water rights.

Recent literature reflects the acceptability of the change from common law (appropriation) rights to administrative rights (permits) to allow for proper management of public waters for the public good.⁴

The State Water Code Act provides the means for those claiming water usage to apply for state recognized rights. Those with recognized rights should be free to trade or lease the water rights, within the conditions of the rights (referring to point of diversion, point of return, quantity and timing of withdrawal and return). This "open market" system (where a seller sells the water he "possesses" at whatever price the market will bear to whomever has the money to pay) discourages waste as is indicated in Wyoming, Florida and Pennsylvania.⁵ In these states, the rights permit is an allowable means of trade. A question may arise of the definition and advantages of selling or leasing of rights. Selling involves the sale of a portion or all of the recognized rights between parties (individuals, institutions, or government agencies). The value of present and future rights may be quite significant and involve the transfer of a large sum of money. Leasing provides for the limited usage of water rights for a defined short term with periodic payments throughout the term of the lease. The lessor retains ownership of the rights with the control and the use of the rights returning to him upon expiration of the lease. The advantages of leasing and selling will be discussed in the following zoning proposal.

The problem encountered is the status of disputed water rights. The state legislature requires disputed water rights be adjudicated, which involves a lengthy and expensive effort. In Washington State, these disputed rights include those of the Indians and the reserved waters claimed by the Federal Government⁷, which comprises a significant amount of the water available for use. The state must pursue an aggressive program to adjudicate the rights in a prompt manner, establish a

means of negotiation to settle disputed rights or claim all disputed waters as public waters and dispense the rights with or without appeal, as deemed appropriate. In today's political and economic condition, many recommend that current disputed rights be settled by negotiation.⁶ The ability to sell rights may lead to more sincere efforts in the settlement of the disputed rights. In times of severe crisis, or droughts, mechanisms can be established that allow the state to make decisions and dispense the rights without appeal, as was accomplished in California⁸ and Delaware⁹.

2) Institute zoning regulations for water sources

It is recognized that the establishment of a market system of water rights may result in the mass transfer of water rights from one use to another (from agricultural to industrial, for example); a benefit to those involved in buying and selling, but not to individuals or the communities. Additionally, aesthetic, recreational and social uses may not be adequately represented in the market atmosphere.¹⁰ Although current legislation, such as the National Wild and Scenic River Act of 1968 and the Washington State Shoreline Management Act of 1971, contain language requiring preservation of natural resources and continuing free flow conditions, the language is without regulatory strength and ineffective at this time.^{11,12}

To prevent the mass, uncontrolled transfer of rights, the Department of Ecology would institute the zoning restrictions. The state is divided into some defined, identifiable regional areas (based on some geographical or political divisions). Each area will establish a committee representing the different interests in the area (including but not

limited to industry, agriculture, municipalities, elected representatives of the general public, environmental groups and water resource experts). The concept of regional committees has been successfully implemented in Maine¹³ and Nebraska.¹⁴ The "Basin Committees" determine a suitable mix of uses based on the current distribution of water rights and establish the recommended zoning restrictions. The restrictions are compiled and established by the state, in order to establish zones that permit the social, economic and environmental goals of the state to be accomplished.

It is possible that a wide diversity of uses and users in a particular basin might not be adequately represented by the Basin Committee of the particular area. The Basin Committee would present its recommendations to the central authority (the Department of Ecology) who looks at the entire statewide recommendations and ensures a proper mixture and diversity of uses. Considering the zoning allocation of the Yellowstone River Basin, the Montana Board of Natural Resources and Conservation (BRNC) stated "... the desires of each applicant could not be met, so the Board had to strive for a balanced allocation of water that would meet, as far as possible, the needs of both consumptive and instream uses."¹⁵ (A poll of Montana residents indicated a greater sympathy for preserving the environment than for gaining economic benefits, in cases where conflicts may arise; the BRNC concurred with this and granted 65% of the annual average flow to water quality, fish and wildlife, and recreation purposes.)¹⁶ RCW provides the mechanisms for the Department of Ecology to interact with the public, and one hopes a comparable level of understanding and concern is demonstrated.

The zoning would be a dynamic process, issued in varying time frames (one year, five year and ten years, for example) and subject to change on a periodic basis, allowing refinements of the state and local goals. Florida has a similar program, issues certificates for varying time lengths, and controls the number of certificates that are available for any particular use.¹⁸ During the life of the certificate, the user is entitled to sell or lease the rights authorized by the certificate. To meet changing conditions of flow or quality the state has the option to not renew expiring certificates and pay the current user a fee comparable to the going rate. This tightens the economic market and forces within the subdivided uses will control who retains what rights. Nebraska's Natural Resource Districts have similar rights.¹⁴

The advantages of leasing and seeling should be emphasized. When the zoning requirements are instituted, the recognized water rights and their usage will be defined. It is possible that the zoning will allow a greater particular use than currently exists in the recognized rights (for example, zoning may permit 30% of the annual average flow to be used for industrial withdrawal, whereas industrial rights currently account for 20%). In that event, the agricultural users may offer, for sale or lease, a portion of their rights. Leases will be subject to the periodic zoning review and changes, therefore may be suitable only for those interested in short term dependability or usage. If zoning requirements are adjusted downward, the leases revert back to the originally defined use (similar to the Florida process). Those interested in dependable long term rights should buy the rights. The state will monitor the transfer and sale of rights and if a particular zoning allocation is

filled, a sale entry into that use will not be permitted. If it becomes necessary for the state to decrease zoning requirements, the rights would be bought back by the state and the holder of rights are suitably reimbursed. As with real property, the current economic benefits and costs, factors of use and dependability will determine the advantages of selling or leasing of rights.

In Washington State, the question of recognized rights must be resolved to effectively institute the zoning regulations. It is possible to define zoning that would accomodate existing rights and are adjusted to accept additional rights as they are defined. While variances in zoning will not be permitted, the periodic renewal of zoning permits over time allows the acceptance of the additional rights, and allows for the changing of social economical and environmental requirements.

3) Institute water use fees.

4) Institute "polluter pays" legislation.

The use of water use fees is recognized as a means of effecting conservation of water resources and has been used extensively during times of water shortage, as a short term measure.¹⁶ Its use for long term effectiveness is often questionable because of the inability to accurately define the benefits and costs necessary to set long term rates so that the marginal cost is equal to the marginal savings (resulting in the highest economical efficiency). The same is true for "polluter pays" legislation. The use of effluent charges is recognized to be an effective means of reducing overall water pollution by reducing the discharge of effluents at its source and has been used in the states of Ohio and New York⁴ and in several countries¹⁹. When the marginal cost of treatment is less than the cost incurred (by effluent

charges), the rational economic discharger will treat the effluent. However, the measure of long term costs, benefits and administrative efficiency are difficult to accurately determine. This leads to varying means of establishing effluent charges, through the use of "pollution rights"^{20,21}, pollution permits²¹, watercourse standards,^{22,23,24} or uniform treatment (which is, in effect, a zero cost effluent charge). To compound the matter, many discussions of water use fees and effluent charges are considered in isolation. Kneese and Bower (1968) argue that a truly effective water management program needs to consider the questions of water quality and quantity in a complementary fashion²³ such as the system used by the French. That system sets a water use fee based on a base cost of water, volume withdrawn, time and zone of withdrawal. The time and zone coefficients are based on the relationship of peak withdrawals, peak flows and quality of water. The water use fee is equal to $\text{Volume} \times \text{Base Cost} \times \text{Data Coefficient} \times \text{Zone Coefficient}$.

The question of effluent charges centers around the rate based on the waste quantity discharged on the rate charged for the right to dispose of certain wastes.²¹ Dales (1968), Mar (1971), and others advocate the sale of rights to discharge. These rights are based on the assimilative capacity of the watercourses. Only a certain number of rights would be available and the demand for the rights determines the economic price. Kneese (1968), Bower (1981), Brill (1979) and Mills (1978) favor the use of effluent charges to achieve effluent control. Dischargers are free to discharge pollutants as required, but would pay a fee for each unit discharged. Various rate structures are suggested, but the basic assumption is that the marginal cost (of the charges) would be greater than the cost of treatment; thus the polluter has a rational economic desire to

utilize the least cost method (treatment). Some advocates on each side recognize that each method implies a right to pollute, and some means of inspection, testing and control is required to assure the success of either system. Different means of testing and inspection are well documented and will not be discussed here.^{25,26,27,28,29}

In the French system, not only is a water use fee charged for water withdrawal, but an effluent charge is applied to those who discharge wastes. Instead of using a double collection system, the French collect the water use fees and then return a dividend based on the quality and quantity of water returned.¹⁶ The dividend is determined on a similar basis as the water use fee. It is based on the volume of water returned to the point of diversion, the base cost of water withdrawn, the coefficient date previously established, and the additive effects of effluent concentration and the treatment removal efficiency. The effluent concentration and removal efficiency has a range of index numbers and is included in the dividend rate such that the rate equals the volume returned x base cost (of water) x date coefficient x (effluent concentration index + removal efficiency index). The water withdrawal fees are collected monthly and the dividends returned quarterly or annually. A complete, intensive discussion of the institution and mechanics of the French system is presented by Bower (1981).

The system is effective in that it is implemented as a revenue producing method. The rates are established at a level that incurs the same costs as are currently experienced by water users and pollutant discharges (often zero!). As pollution levels increase or conservation measures are required, the rates are raised. The Basin Committees are

expected and encouraged to raise the rates at periodic intervals.²¹ As these rates gradually rise, each water consumer and pollutant discharger will meet the point where the marginal cost (of the rate) exceeds the cash of treatment or water use benefits. The use level and pollutant discharge will decrease as the rates slowly rise. The revenue collected can be used to provide grants, loans or educational services for all water users and/or pollutant dischargers. As the means of identifying and controlling non-point source pollution is gained, the effluent rates can be applied against those sources. As the rates and charges increase, the easiest means of conservation and treatment will be used first. The more advanced (and costly) techniques will be utilized as the more costly charges are incurred.

The determination of the pollutant basis for the effluent charge is not adequately addressed. Authorities argue that the effluent charge should be based on each of the 200+ identified toxic substances,³⁰ that a surrogate method be used (quantity of certain biomass kill, aesthetic measurements of sight or smell),^{20,31} that DO or BOD levels be used,^{20,24} the quantities of waste,²¹ or some combination of all the above.²³ Each basis has certain advantages, limitations and shortcomings.

Current regulations of standard uniform treatment are based on the level of BOD removal. It is administratively efficient and practical to continue the BOD removal as the initial basis of the effluent charge, to permit an acceptable methods that would facilitate easier adoption of the effluent charge legislation.²⁴ Once the program is implemented and accepted, other bases and indices may be considered.

The previously mentioned Basin Committees, as identified representatives of the water users, advises the state of plans and goals in the

water quality and quantity areas. The state, with its authority and legislative powers, will establish the goals on a statewide basis. The Basin Committees then determine the means of meeting the goals established, and determine the rates necessary to produce the desired effect. In this manner, the overall quality and quantity of the water in the state can be controlled by a central authority, but the responsibility for the means and accumulation of revenue for those means are accomplished on a regional basis and can be determined by the will and desires of the local populace.

The state, even today, enjoys an excellent source of clean abundant water. Therefore, the proposals identified above will only be acceptable to industry, farmers, environmentalists, and the general public if it is perceived that it will not incur additional cost (either in economic, social or environmental terms). The implementation of these proposals must be made so that the legislative means of controlling quality and quantity have changed while the economic, social and environmental conditions have not. As conditions change, the environment deteriorates, or quantity of water available for use decreases, then the mechanism is available to initiate the programs to decrease the pollution and increase the supply of our water resources. The process can be started today and slowly adjusted over time to accommodate the desired goals of the public and the abilities of the polluters to change their ways. Alternatively, it can lay fallow for years and then be implemented effectively and dramatically in times of crises.

As Dales advises:

"We all know that pollution can't be wished away and must bear the costs in one of three forms: treating wastes to reduce their noxious effects before we release them into the environment; avoiding their noxious effects after they have been released into the environment, or simply suffering their noxious effects after they have been released into the environment ... In the end it is you and I who elect the persons who are going to decide how much pollution we are going to have, what such pollution is going to be, and where we are going to have it. If you are concerned about present levels of pollution, insist that your governments (which own the water and determine property rights) start reducing the amount of pollution ... The only real question is how much you and I are willing to pay in order to reduce pollution."²¹

V. Conclusion

As indicated in the opening pages, this paper was only intended to provide a quick surface review of the development of the state water use policy and to present some discussion on areas where improvement was needed. It is recognized that there are numerous gaps in the development review and that much, much more thought and discussion is required to successfully implement any proposed revisions. However, I hope that you perceived a bright future for the water use policy of this state. The citizenry of this state are fiercely proud of their history of clean abundant water and seem to go to great lengths to continue that standard. It is through this desire for clean and abundant water that the existing policy has been developed. Sure, it's gone through a significant amount of heated debate, public arguments, and legislative reversals. It is this kind of growth and development that results in a strong and effective policy. On the surface it may not appear to be as effective as the policies of some other state or country, but it has not been developed in a hasty manner under crises circumstances. The state has the one strong advantage that it has been able to carefully and purposely determine the policy to follow and not be pressured to make hasty decisions to defuse the crises.

However, this advantage is disappearing rather quickly. The recent droughts have dramatically shown that time is running short for the completion of a comprehensive policy. The state must maintain and continue the aggressive manner it has followed. Generations before us have provided a very strong foundation for this policy; we must continue to build the policy upon this foundation. Also, it must be realized that with such

a complex matter as water that the policy cannot be viewed as a static instrument. It must be continually reviewed, updated, revised, altered and improved, as the situation warrants it. It is hoped that with the 20/20 hindsight each individual possesses, and with the thoughts and alternatives this paper has provoked, that the water use policy of Washington State can expect continued growth, development and strength.

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APPENDIX A

WAC 173-201-080 Specific classifications--
Freshwater. Specific fresh surface waters of the state of Washington are classified as follows:

- | | |
|--|----------|
| (1) American River from confluence with Bumping River to headwaters. | Class AA |
| (2) Baker River. | Class AA |
| (3) Big Quilcene River and tributaries. | Class AA |
| (4) Bumping River from confluence with Naches River to headwaters. | Class AA |
| (5) Burnt Bridge Creek. | Class A |
| (6) Cascade River. | Class AA |
| (7) Cedar River from Lake Washington to Landsburg Dam. | Class A |

[Title 173 WAC—p 179]

(8) Cedar River from Landsburg Dam to headwaters. Special condition – no waste discharge will be permitted.

Class AA

(9) Chehalis River from Scammon Creek to Newaukum River. Special condition – dissolved oxygen shall exceed 5.0 mg/l or 50 percent saturation, whichever is greater, from June 1, to September 15. For the remainder of the year, the dissolved oxygen shall meet Class A criteria.

Class A

(10) Chehalis River from Newaukum River to Rock Creek.

Class A

(11) Chehalis River, from Rock Creek to headwaters.

Class AA

(12) Chehalis River, south fork, from mouth to headwaters.

Class A

(13) Chewack River from confluence with Methow River to headwaters.

Class AA

(14) Chiwawa River from confluence with Wenatchee River to headwaters.

Class AA

(15) Cispus River.

Class AA

(16) Clearwater River.

Class A

(17) Cle Elum River from confluence with Yakima River to Cle Elum Lake.

Class AA

(18) Cle Elum River from Cle Elum Lake to headwaters.

Class AA

(19) Cloquallum River from mouth to headwaters.

Class A

(20) Clover Creek from outlet of Lake Spanaway to inlet of Lake Steilacoom.

Class A

(21) Columbia River from mouth to the Washington–Oregon border (river mile 309). Special conditions – water temperatures shall not exceed 20.0° Celsius due to human activities. When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed 0.3° Celsius due to any single source or 1.1° Celsius due to all such activities combined. Dissolved oxygen shall exceed 90 percent of saturation.

Class A

(22) Columbia River from Washington–Oregon border (river mile 309) to Grand Coulee Dam (river mile 595). Special condition from Washington–Oregon border (river mile 309) to Priest Rapids Dam (river mile 397). Temperature – water temperatures shall not exceed 20.0° Celsius due to human activities. When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

Class A

(23) Columbia River from Grand Coulee Dam (river mile 595) to Canadian border (river mile 742).

Class AA

(24) Colville River.

Class A

(25) Coweeman River from mouth to Mulholland Creek.

Class A

(26) Coweeman River from Mulholland Creek to headwaters.

Class AA

(27) Crab Creek and tributary streams from confluence with Columbia River to headwaters.

Class B

(28) Decker Creek from mouth to headwaters.

Class AA

(29) Deschutes River from mouth to headwaters.

Class A

(30) Dickey River.

Class A

(31) Dosewallips River and tributaries.

Class AA

(32) Duckabush River and tributaries.

Class AA

(33) Dungeness River from mouth to Canyon Creek.

Class A

(34) Dungeness River and tributaries from Canyon Creek to headwaters.

Class AA

(35) Duwamish River from mouth south of a line bearing 254° true from the NW corner of berth 3, terminal No. 37 to the confluence with the Black River (Tukwila).

Class B

(36) Duwamish River upstream from the confluence with the Black River to the limit of tidal influence.

Class A

(37) Elwha River and tributaries.

Class AA

(38) Entiat River from Wenatchee National Forest boundary to headwaters.

Class AA

(39) Grande Ronde River from mouth to Oregon border (river mile 37). Special condition – temperature – water temperatures shall not exceed 20.0° Celsius due to human activities. When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

Class A

(40) Grays River from Grays River Falls to headwaters.

Class AA

(41) Green River (Cowlitz County) from mouth to headwaters.

Class AA

(42) Green River (King County) from intersection of the river with west boundary of Sec. 27, T.21N., R.6E., to intersection of the river with west boundary of Sec. 13, T.21N., R.7E.

Class AA

(43) Green River (King County) from intersection of the river with west boundary of Sec. 13, T.21N., R.7E., to headwaters. Special condition – no waste discharge will be permitted.

Class AA

(44) Hamma Hamma River and tributaries.

Class AA

(45) Hanaford Creek from mouth to east boundary line of Sec. 25, T.15N., R.2W. Special condition – dissolved oxygen shall exceed 6.5 mg/l or 70 percent saturation whichever is greater.

Class A

- (46) Hanaford Creek from east boundary line of Sec. 25, T.15N., R.2W., to headwaters.
- (47) Hoh River and tributaries from mouth to headwaters.
- (48) Hoquiam River from mouth to river mile 9.
- (49) Issaquah Creek from mouth to headwaters.
- (50) Kalama River from lower Kalama River Falls to headwaters.
- (51) Klickitat River from Little Klickitat River to headwaters.
- (52) Lake Washington Ship Canal from Lake Washington to Government Locks. Special condition – salinity shall not exceed one part per thousand (1.0 ppt) at any point or depth along a line that transects the ship canal at the University Bridge.
- (53) Lewis River, east fork, from Multon Falls to headwaters.
- (54) Little Wenatchee River from Lake Wenatchee to headwaters.
- (55) Methow River from its confluence with the Chewack River to headwaters.
- (56) Methow River from mouth to the confluence of the Chewack River.
- (57) Mill Creek from confluence with Walla Walla River to 13th street bridge in Walla Walla. Special condition – dissolved oxygen concentration shall exceed 5.0 mg/l or 50 percent saturation whichever is greater.
- (58) Mill creek from city of Walla Walla waterworks dam to headwaters. Special condition – no waste discharge will be permitted.
- (59) Naches River from Snoqualmie National Forest boundary to headwaters.
- (60) Naselle River from Naselle Falls to headwaters.
- (61) Newaukum River from mouth to headwaters.
- (62) Nisqually River from Alder Dam to headwaters.
- (63) Nooksack River from mouth to river mile 4 (just below Ferndale).
- (64) Nooksack River from confluence with Maple Creek to headwaters.
- (65) Nooksack River, south fork, from Skookum Creek to headwaters.
- (66) Nooksack River, middle fork.
- (67) Okanogan River.
- (68) Palouse River from mouth to Colfax (river mile 88, confluence with south fork).
- (69) Palouse River from Colfax (river mile 88, confluence with south fork) to Idaho border (river mile 110). Special condition – Temperature – water temperatures shall not exceed 20.0° Celsius due to human activities.

Class A

Class AA

Class B

Class A

Class AA

Class AA

Lake Class

Class AA

Class AA

Class AA

Class A

Class B

Class AA

Class AA

Class AA

Class A

Class AA

Class A

Class AA

Class AA

Class AA

Class A

Class B

When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

(70) Pend Oreille River from Canadian border (river mile 17) to Idaho border (river mile 86). Special condition – Temperature – water temperatures shall not exceed 20.0° Celsius due to human activities. When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

(71) Pilchuck River from city of Snohomish waterworks dam to headwaters.

(72) Puyallup River from mouth to river mile 1 (from mouth).

(73) Puyallup River from Kings Creek to headwaters.

(74) Queets River from mouth to river mile 3.0.

(75) Queets River and tributaries from river mile 3 to headwaters.

(76) Quillayute River.

(77) Quinault River from mouth to river mile 2.

(78) Quinault River and tributaries from river mile 2 to headwaters.

(79) Satsop River, east fork, from mouth to headwaters.

(80) Satsop River, middle fork, from mouth to headwaters.

(81) Satsop River, west fork, from mouth to headwaters.

(82) Sauk River.

(83) Skagit River from mouth to Burlington (river mile 17, Nookachamps Creek).

(84) Skagit River from Skiyou Slough, (river mile 26) to Canadian border (river mile 91).

(85) Skokomish River and tributaries.

(86) Skookumchuck River from Bloody Run Creek to headwaters.

(87) Skykomish River from May Creek to headwaters.

(88) Snake River from mouth to Washington-Idaho-Oregon border. Special condition – Temperature

(a) Below confluence with Clearwater River. Water temperatures shall not exceed 20.0° Celsius due to human activities. When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius;

Class A

Class A

Class AA

Class B

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class A

Class A/

Class A/

Class A/

Class A/

nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

(b) Above confluence with Clearwater River. Water temperatures shall not exceed 20.0° Celsius due to human activities. When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed 0.3° Celsius due to any single source or 1.1° Celsius due to all such activities combined.

(89) Snohomish River from mouth and east of longitude 122°13'40"W. upstream to latitude 47°56'30"N. (southern tip of Ebey Island). Special condition: Fecal coliform organisms shall not exceed a median value of 200, organisms/100 ml. with not more than 10 percent of samples exceeding 400 organisms/100 ml.

(90) Snohomish River upstream from latitude 47°56'30"N. (southern tip of Ebey Island) to limit of tidal influence.

(91) Snoqualmie River, middle fork, from mouth to headwaters.

(92) Snoqualmie River, north fork, from mouth to headwaters.

(93) Snoqualmie River, south fork, from west boundary of Twin Falls State Park to headwaters.

(94) Soleduck River and tributaries.

(95) Spokane River from mouth to Idaho border (river mile 91). Special condition – Temperature – water temperatures shall not exceed 20.0° Celsius due to human activities. When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

(96) Stillaguamish River from mouth to river mile 7 (at Norman).

(97) Stillaguamish River, north fork, from mouth to Squire Creek.

(98) Stillaguamish River, north fork, from Squire Creek to headwaters.

(99) Stillaguamish River, south fork, from Canyon Creek to the headwaters.

(100) Stehekin River from Lake Chelan to headwaters.

(101) Suiattle River.

(102) Sulphur Creek.

(103) Sultan River from mouth to Chaplain Creek.

(104) Sultan River from Chaplain Creek to headwaters. Special condition – no waste discharge will be permitted.

(105) Sumas River from Canadian border (river mile 12) to headwaters (river mile 23).

(106) Tieton River from confluence with Naches River to headwaters.

(107) Tolt River from mouth to intersection of the river with west boundary of Sec. 31, T.26N., R.9E.

(108) Tolt River from intersection of the river with west boundary of Sec. 31, T.26N., R.9E. to headwaters. Special condition – no waste discharge will be permitted.

(109) Touchet River from Dayton water intake structure to headwaters.

(110) Toutle River, north fork, from Green River to headwaters.

(111) Toutle River, south fork, from mouth to headwaters.

(112) Tucannon River from Umatilla National Forest boundary to headwaters.

(113) Twisp River from confluence with Methow River to headwaters.

(114) Union River from Bremerton waterworks dam to headwaters. Special condition – no waste discharge will be permitted.

(115) Walla Walla River from mouth to Lowden (river mile 15).

(116) Walla Walla River from Lowden (river mile 15) to Oregon border (river mile 40). Special condition – Temperature – water temperatures shall not exceed 20.0° Celsius due to human activities. When natural conditions exceed 20.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

(117) Wenatchee River from Wenatchee National Forest boundary to headwaters.

(118) White River (Pierce–King Counties) from Mud Mountain Dam to headwaters.

(119) White River (Chelan County) from Lake Wenatchee to headwaters.

(120) Willapa River upstream of a line bearing 70° true through Mailboat Slough light.

(121) Wishkah River from mouth to river mile 6.

(122) Wishkah River from west fork of Wishkah River to intersection of the river with south boundary of Sec. 33, T.21N., R.8W.

(123) Wishkah River from intersection of the river with south boundary of Sec. 33, T.21N., R.8W. to headwaters. Special condition – no waste discharge will be permitted.

(124) Yakima River from confluence with Columbia River to Sunnyside Dam.

(125) Yakima River from Sunnyside Dam to river mile 185.6 (just below the confluence of the Cle Elum River). Special condition – Temperature – water temperatures shall not

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class AA

Class B

Class A

Class AA

Class AA

Class AA

Class A

Class B

Class AA

Class AA

Class B

exceed 21.0° Celsius due to human activities. When natural conditions exceed 21.0° Celsius (freshwater), no temperature increase will be allowed which will raise the receiving water temperature by greater than 0.3° Celsius; nor shall such temperature increases, at any time, exceed $t=34/(T+9)$.

Class A

(126) Yakima River from river mile 185.6 (immediately upstream from the Cle Elum River) to headwaters.

Class AA

[Statutory Authority: RCW 90.48.035, 78-02-043 (Order DE 77-32), § 173-201-080, filed 1/17/78; Order DE 73-22, § 173-201-080, filed 11/16/73; Order 73-4, § 173-201-080, filed 7/6/73.]

WAC 173-201-085 Specific classifications--Marine water. Specific marine surface waters of the state of Washington are classified as follows:

- | | |
|--|----------|
| (1) Bellingham Bay east of a line bearing 185° true from entrance of boat basin (light No. 2), except as otherwise noted. | Class B |
| (2) Bellingham Bay, inner, easterly of a line bearing 142° true through fixed green navigation light at southeast end of dock (approximately 300 yards northeast of bell buoy "2") to the east boat basin jetty. | Class B |
| (3) Budd Inlet south of latitude 47°04'N. (south of Priest Point Park). | Class B |
| (4) Coastal waters Pacific Ocean from Ilwaco to Cape Flattery. | Class AA |
| (5) Commencement Bay from south and east of a line bearing 258° true from "Brown's point" and north and west of line bearing 225° true through the Hylebos waterway light. | Class A |
| (6) Commencement Bay, inner, from south and east of a line bearing 225° true through Hylebos Waterway light except the city waterway south and east of south 11th Street. | Class B |
| (7) Commencement Bay, city waterway south and east of south 11th Street. | Class C |
| (8) Drayton Harbor, south of entrance. | Class A |
| (9) Dyes and Sinclair Inlets west of longitude 122°37'W. | Class A |

- | | |
|--|----------|
| (10) Elliott Bay east of a line between Pier 91 and Duwamish head. | Class A |
| (11) Everett Harbor east of longitude 122°13'40"W. and southwest of a line bearing 121° true from light "4" (Snohomish River mouth). | Class A |
| (12) Everett Harbor, inner, north and east of a line bearing 121° true from light "4" (Snohomish River mouth). | Class B |
| (13) Grays Harbor west of longitude 123°59'W. | Class A |
| (14) Grays Harbor east of longitude 123°59'W. to longitude 123°45'45"W. (Cosmopolis). Special condition - dissolved oxygen - shall exceed 5.0 mg/l or 60 percent saturation, whichever is greater. | Class B |
| (15) Guemes Channel, Padilla, Samish and Bellingham Bays east of longitude 122°39'W. and north of latitude 48°27'20"N., except as otherwise noted. | Class A |
| (16) Hood Canal. | Class AA |
| (17) Mukilteo and all North Puget Sound West of longitude 122°39' W. (Whidbey, Fidalgo, Guemes and Lummi Island), except as otherwise noted. | Class AA |
| (18) Oakland Bay west of longitude 123°05'W. (inner Shelton harbor). | Class B |
| (19) Port Angeles south and west of a line bearing 152° true from buoy "2" at the tip of Ediz Hook. | Class A |
| (20) Port Gamble south of latitude 47°51'20"N. | Class A |
| (21) Port Townsend west of a line between Point Hudson and Kala point. | Class A |
| (22) Possession Sound, south of latitude 47°57'N. | Class AA |
| (23) Possession Sound, Port Susan, Saratoga Passage, and Skagit Bay east of Whidbey Island and longitude 122°38'35"W. (bridge) between latitude 47°57'N. (Mukilteo) and latitude 48°27'20"N. (Similk | Class A |

Bay), except as otherwise noted.

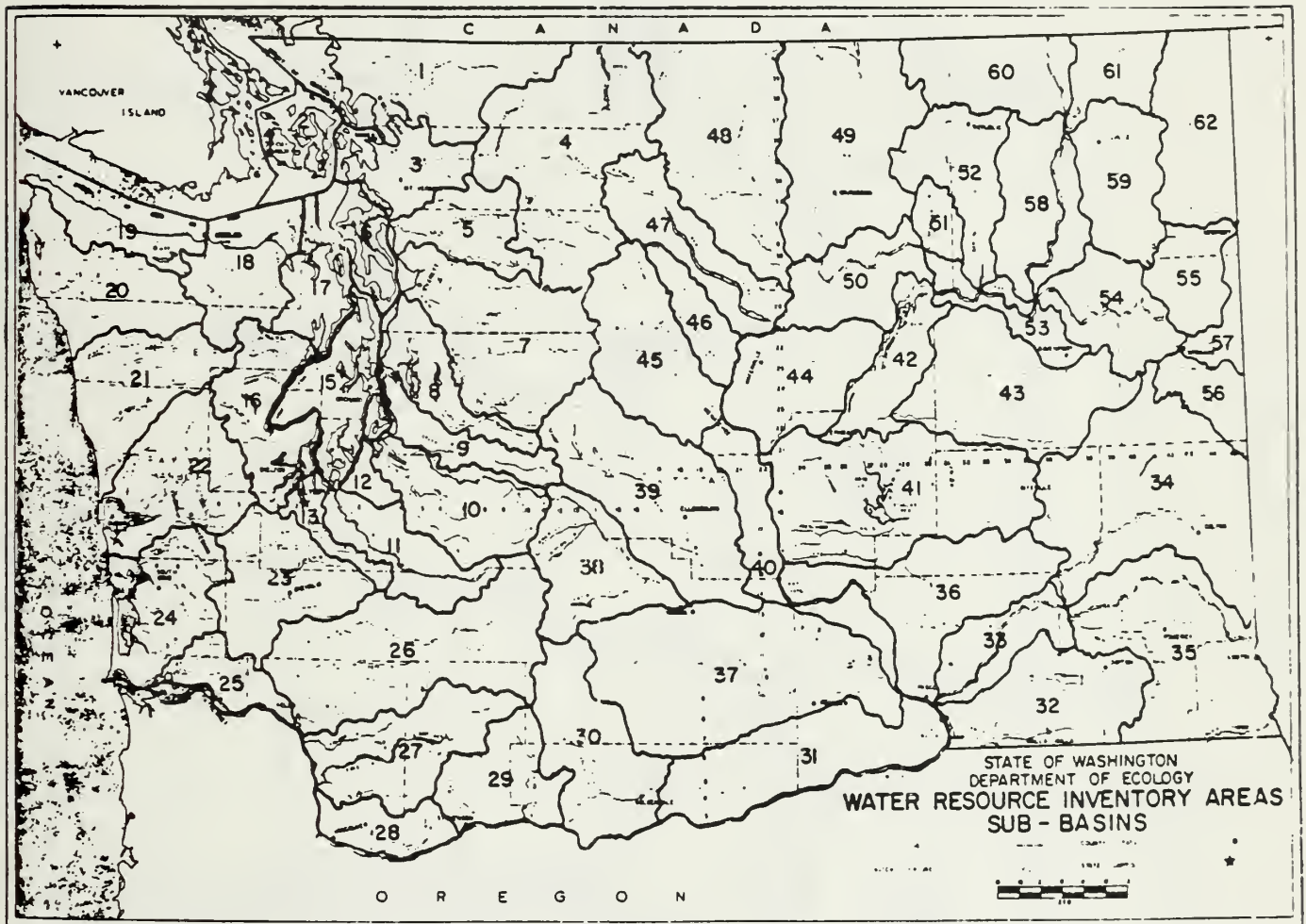
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|---|----------|
| (24) Puget Sound through Admiralty Inlet and South Puget Sound, south and west to longitude 122°52'30"W. (Brisco Point) and longitude 122°51'W. (northern tip of Hartstene Island). | Class AA |
| (25) Sequim Bay southward of entrance. | Class AA |
| (26) South Puget Sound west of longitude 122°52'30"W. (Brisco Point) and longitude 122°51'W. (northern tip of Hartstene Island, except as otherwise noted). | Class A |
| (27) Strait of Juan de Fuca. | Class AA |
| (28) Willapa Bay seaward of a line bearing 70° true through Mailboat Slough light. | Class A |

[Statutory Authority: RCW 90-48-035. 78-02-043 (Order DE 77-32), § 173-201-085, filed 1/17/78.]

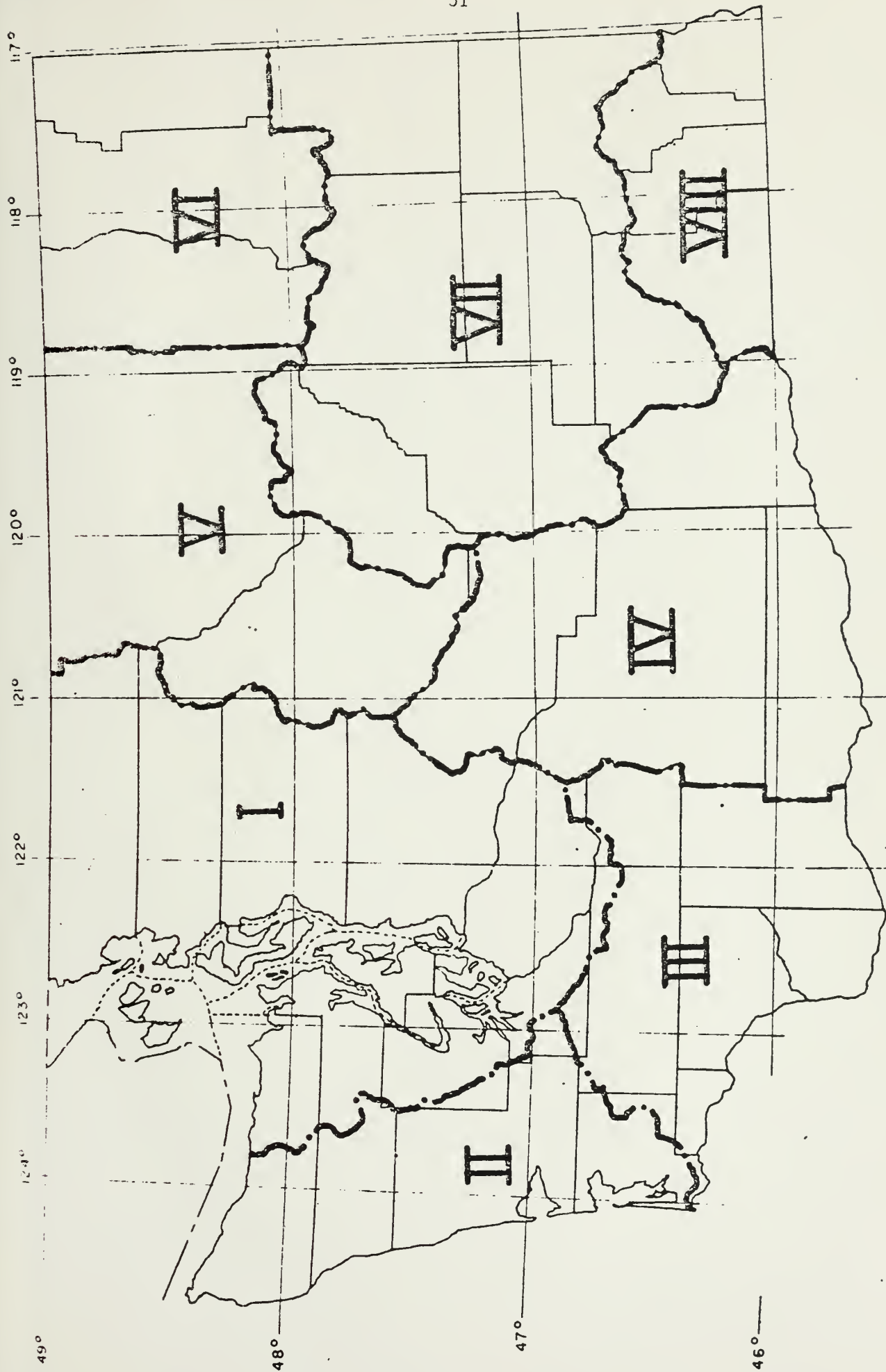
APPENDIX B

WAC 173-500-990 Map--Water resources inventory areas sub-basins.

WAC Map WATER RESOURCES INVENTORY AREAS SUB-BASINS.



[Order DE 75-23, Map (codified as WAC 173-500-990), filed 1/6/76.]



Inventory Study Areas.

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A review of the
Washington state water
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